



# **$\beta$ -AMYLOID PEPTIDE-BINDING PROTEINS AND POLYNUCLEOTIDES ENCODING THE SAME**

[0001] This application is a continuation of U.S. Ser. No. 09/172,990 filed October 14, 1998, now pending, which is a continuation-in-part of U.S. Ser. No. 09/060, 609 filed April 15, 1998, now abandoned, which claims benefit of U.S. Provisional Application 60/064,583, filed April 16, 1997, the contents of which are incorporated into this application by reference.

## **Field of the Invention**

[0002] The present invention relates to a novel polynucleotides and proteins encoded by such polynucleotides, along with therapeutic, diagnostic, and research utilities for these polynucleotides and proteins. In particular, the invention relates to polynucleotides and proteins encoded by such polynucleotides which bind to  $\beta$ -amyloid peptide, one of the primary components of amyloid deposits associated with Alzheimer's Disease.

## **Background of the Invention**

[0003] Alzheimer's disease (AD) is a progressive dementing disorder of the elderly characterized by a series of structural abnormalities of the brain. Neurons in multiple regions of the central nervous system (CNS) become dysfunctional and die, resulting in alterations in synaptic inputs. Cell bodies and proximal dendrites of these vulnerable neurons contain neurofibrillary tangles composed of paired helical filaments, the main component of which is a phosphorylated microtubular-binding protein, namely tau. One of the hallmarks of the disease is the accumulation of amyloid containing deposits within the brain called senile (or neuritic) plaques. The principal component of amyloid plaques is  $\beta$ -amyloid peptide (hereinafter "BAP", also referred in the literature as A $\beta$ ,  $\beta$ AP, etc.) which forms dense aggregates during the course of AD.

[0004] BAP is a 39-43 amino acid peptide derived by proteolytic cleavage of amyloid precursor protein (hereinafter "APP") and composed of a portion of the transmembrane domain and the luminal/extracellular domain of APP. It is thought that the BAP peptide comprising 42 amino acids (BAP42) is potentially the more toxic aggregated form in humans. APP occurs as several BAP-containing isoforms. The major forms are comprised of 695, 751, and 770 amino acids, with the latter two APP containing a domain